



## 2013-2014 South Carolina Bobwhite Quail Hunter Survey



The South Carolina Department of Natural Resources Small Game Project conducts an annual survey of the state's bobwhite quail (*Colinus virginianus*) hunters. This survey was initiated during the 1987-88 hunting season and was conducted for the 27<sup>th</sup> consecutive year during the 2013-14 season. The purpose of the Quail Hunter Survey is to collect quantitative information on hunting success, which aids biologists in tracking quail population trends.

### **METHODS**

A mailing list was generated from individuals who had participated in the Quail Hunter Survey in previous years and individuals who responded to news releases or otherwise heard about the survey.

Immediately prior to the opening of the 2013-14 quail hunting season, a total of 97 potential cooperators were provided with materials necessary to participate in the survey. The materials included a pocket-size hunting diary, a data sheet, a postage-paid return envelope, and instructions for the survey. Potential cooperators were also provided with a larger return envelope with tags and asked to collect 10 wings from harvested quail. The wings were used to estimate sex and age ratios for the state's quail population. Funds for printing of the hunting diary booklets were generously provided by the South Carolina State Committee of Quail Unlimited.

Cooperators were instructed to keep accurate records while quail hunting by recording the following information for each hunt: date, county of hunt, number of quail coveys flushed, number of quail bagged, an estimate of average covey size, number of woodcock (*Scolopax minor*) flushed, number of woodcock bagged, time expended on each hunt, and number of rabbits (*Sylvilagus* spp.) seen while quail hunting. Information and comments concerning the overall quality of the season, dog performance, quail food habits, weather, habitat conditions and other observations were also requested. Cooperators were asked to collect 1 wing from each quail harvested (up to 10 per cooperator) and affix a tag with the date, county and sex of the bird to each wing. Survey participants were urged to record information for wild, native bobwhite quail hunts only.

Near the close of the quail season, a reminder postcard was mailed to each potential cooperator encouraging prompt return of the survey forms and wings. Data received were entered on a computer file, proofed and summarized. Data were then analyzed statistically to determine differences by year, county, region, month, or a combination of these variables.

## **RESULTS AND DISCUSSION**

### **Statewide**

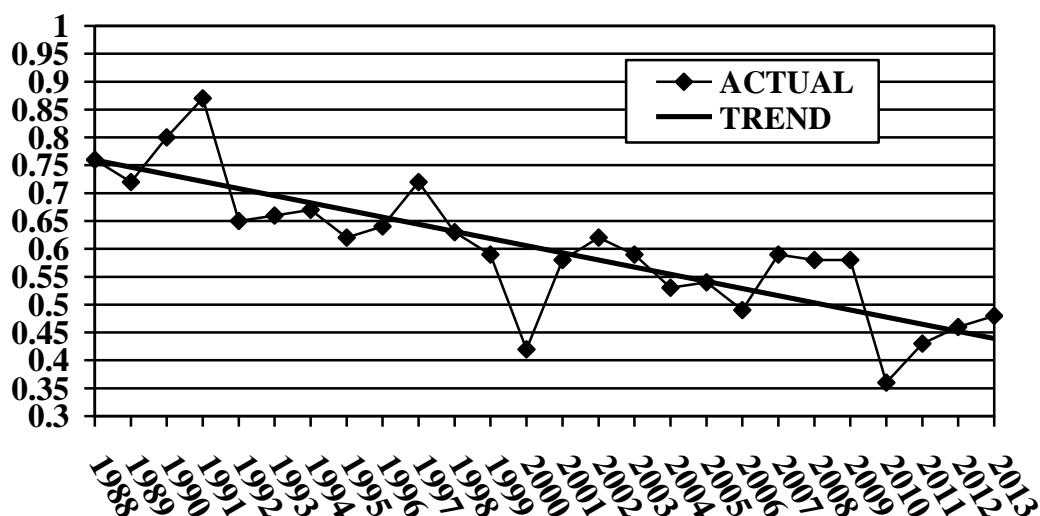
Responses were received from 33 individuals, with 30 hunters providing usable data. The total response rate was 31%. Information was obtained from 390 hunts, totaling 1122 quail hunting hours. The highest frequency of survey quail hunting activity occurred during the months of January and February, closely followed December (Table 1).

**Table 1. Quail hunting activity by month, 2013-14 South Carolina Quail Hunter Survey**

Month	Number of Hunts	Percentage of Total
November	33	8.5
December	103	26.4
January	124	31.8
February	117	30.0
March	13	3.3
TOTAL	390	100.0

Survey cooperators flushed an average of 0.48 coveys per hour during the 2013-14 season, a slight increase from the 2011-12 season (Table 2). Quail bagged per hour also increased slightly and rabbits jumped per hour increased significantly from last year. The reported average covey size decreased slightly from the previous year. The trend in the coveys per hour index over the 26 years of the survey is illustrated in Figure 1. Quail hunters responding to the survey reported flushing 81 woodcock while quail hunting, for a flush rate of 0.07 woodcock per hour which was less than the 0.21 woodcock flushed per hour in 2011-12. The number of woodcock harvested was 10 during the 2013-14 season, down from 47 woodcock harvested during the 2011-12 season.

### COVEYS FOUND/HOUR



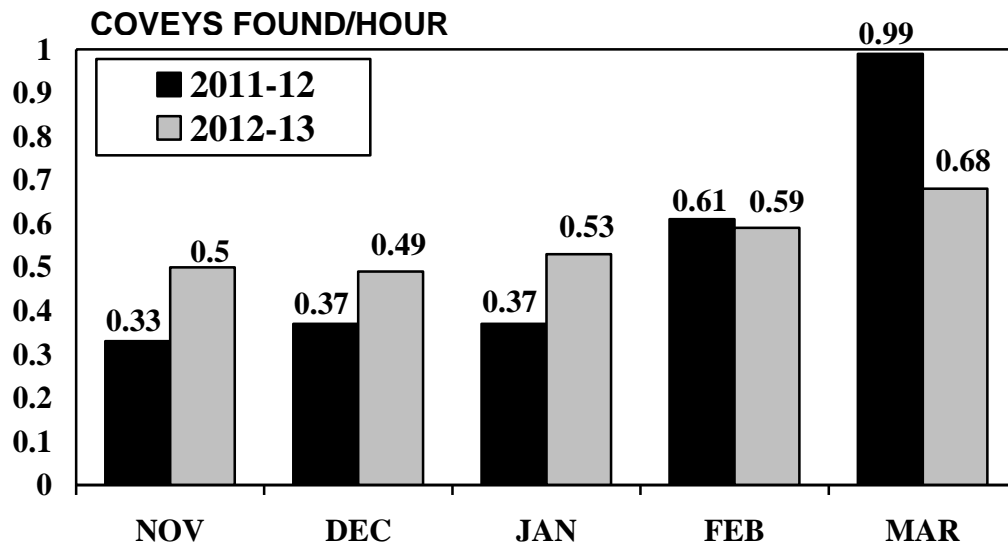
**Figure 1. Coveys per hour index and trend, South Carolina Quail Hunter Survey, 1988-2013.**

**Table 2. Statewide South Carolina Quail Hunter Survey results, 1988-2013.**

Year of Survey	Coveys Found Per Hour	Quail Bagged Per Hour	Average Covey Size	Rabbits Jumped Per Hour
1987-88	0.76	0.99	12.5	0.21
1988-89	0.72	0.94	12.2	0.19
1989-90	0.80*	1.04	12.9	0.16
1990-91	0.87*	1.07	12.5	0.19*
1991-92	0.65*	0.75*	12.2	0.15*
1992-93	0.66	0.73	12.2	0.15
1993-94	0.67	0.73	11.9	0.22*
1994-95	0.62	0.72	11.8	0.17*
1995-96	0.64	0.76	11.7	0.16
1996-97	0.72*	0.79	12.3	0.18
1997-98	0.63*	0.66*	11.9	0.14
1998-99	0.59	0.62	11.3*	0.16
1999-00	0.42*	0.38*	10.7*	0.14
2000-01	0.58*	0.55*	11.4*	0.13
2001-02	0.62	0.56	11.8	0.17*
2002-03	0.59	0.56	11.2	0.16
2003-04	0.53*	0.49	11.6*	0.13
2004-05	0.54	0.55	11.1*	0.14
2005-06	0.49	0.42*	10.5	0.13
2006-07	0.59*	0.43	11.2*	0.14
2007-08	0.58	0.33*	12.1*	0.15
2008-09	0.58	0.41	10.9*	0.18
2009-10	0.36*	0.32	11.1	0.10
2010-11	0.43	0.33	10.4*	0.15*
2011-12	0.46	0.40	10.1	0.20*
2013-14	0.48	0.32	10.2	0.19

\*Significantly different from the previous year (P<0.05)

The Quail Hunter Survey also provides information on hunting success by month, region, and county. Hunting success rates as measured by coveys per hour were higher in February and March and lower in all months when compared with the previous season (Fig. 2). Results for March are based on only seven hunts.

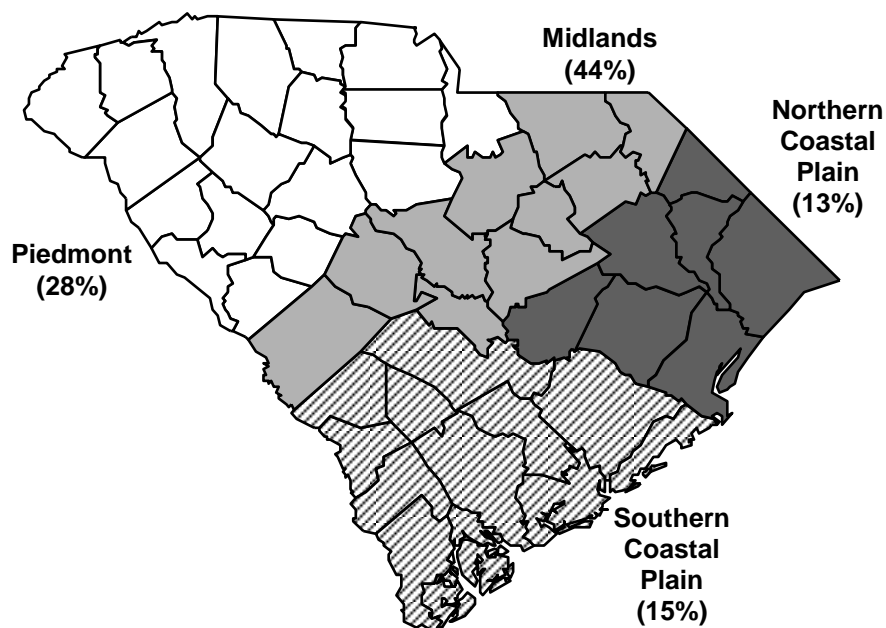


**Figure 2. Coveys per hour index by month for the 2011-12 and 2013-14 seasons, South Carolina Quail Hunter Survey.**

### **Regional Comparisons**

South Carolina can be divided into 4 broad geographical regions based on habitat type similarities. The Piedmont, which includes the mountain and foothills areas, encompasses about 1/3 of the state. The Midlands extends in a broad band of mostly sandhills habitat on a northeast - southwest axis across the middle of South Carolina. The Northern Coastal Plain or "Pee Dee" and the Southern Coastal Plain or "Low Country" are the other 2 regions.

Hunting effort expended in the 2013-14 Quail Hunter Survey was greatest in the Midlands, accounting for 44% of all hunts (Fig. 3). The coveys per hour index was highest in the Midlands, closely followed by the Southern Coastal Plain. The coveys per hour index was significantly lower in the Northern Coastal Plain and the Piedmont than in the other two regions. (Table 3). Quail harvest rate in the Midlands was higher than in the other three regions. The reported average size of quail coveys ranged from 8.3 birds per covey in the Piedmont to 11.4 birds per covey in the Northern Coastal Plain. The rabbit jumping rate by quail hunters was highest in the Midlands and lowest in the Northern Coastal Plain.



**Figure 3. Percentage of total hunts occurring in each region, South Carolina Quail Hunter Survey, 2013-14.**

**Table 3. Results by region, South Carolina Quail Hunter Survey, 2013-14.**

Region	Coveys Found Per Hour*	Quail Bagged Per Hour*	Average Covey Size*	Rabbits Jumped Per Hour*
Midlands	0.60A	0.44A	10.2A	0.26A
N. Coastal Plain	0.51A	0.26A	11.4A	0.07B
S. Coastal Plain	0.56B	0.27A	10.2B	0.11A
Piedmont	0.44B	0.31A	8.3B	0.17A

\*Numbers followed by the same letter within the same column are not significantly different ( $P > 0.05$ ).

## **County Results**

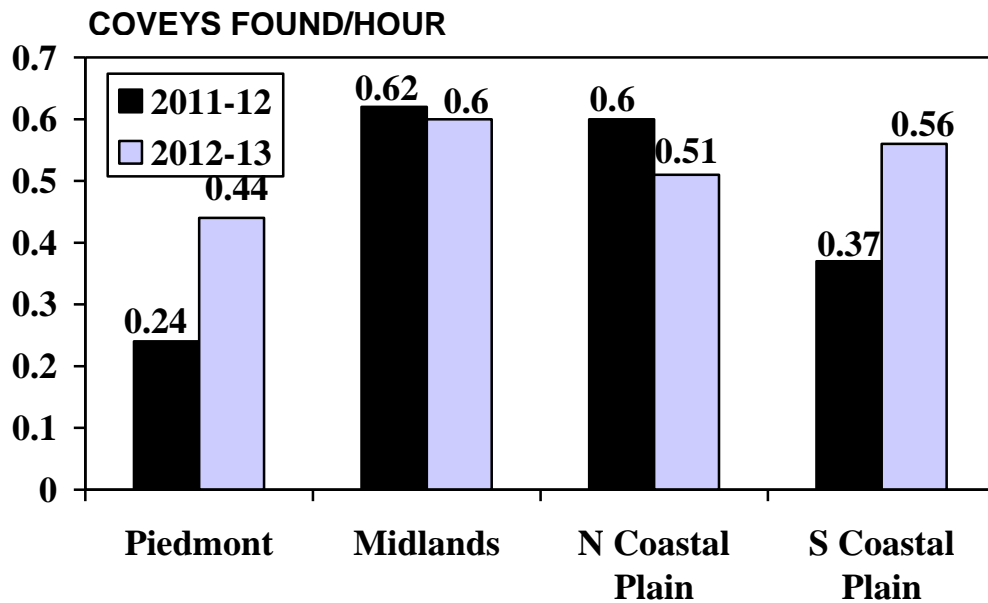
The top 5 counties for each of 4 indices are listed in Table 4. A minimum of 15 sample hunts had to occur in a particular county to be included in this ranking. Sumter County claimed the top spot in the coveys per hour index at 1.12, followed by Orangeburg (1.05) and Edgefield (0.78) counties. Sumter County led the state in quail harvested per hour at 1.02, followed by Edgefield (0.63) and Lee (0.56).

Midlands counties have eclipsed Northern Coastal Plain counties in most of the major quail hunting indices, including coveys per hour (Fig. 4). However, historically and in the past few years, Northern Coastal Plain counties have proven better for quail hunting in South Carolina. County results should be interpreted cautiously due to the relatively low number of hunts upon which they are based.

**Table 4. Ranking of the top counties for indices measured in the South Carolina Quail Hunter Survey, 2013-14.**

Rank*	Coveys Found Per Hour	Quail Harvested Per Hour	Average Covey Size	Rabbits Jumped Per Hour
1	Sumter (1.12)	Sumter (1.02)	Clarendon (11.9)	Lee (0.64)
2	Orangeburg (1.05)	Edgefield (0.63)	Chesterfield (10.3)	McCormick (0.19)
3	Edgefield (0.78)	Lee (0.56)	Lee (10)	Sumter (0.17)
4	Lee (0.66)	Orangeburg (0.53)	Orangeburg (9.5)	Newberry (0.16)
5	Clarendon (0.64)	Clarendon (0.50)	Edgefield (7.8)	Horry (0.13)

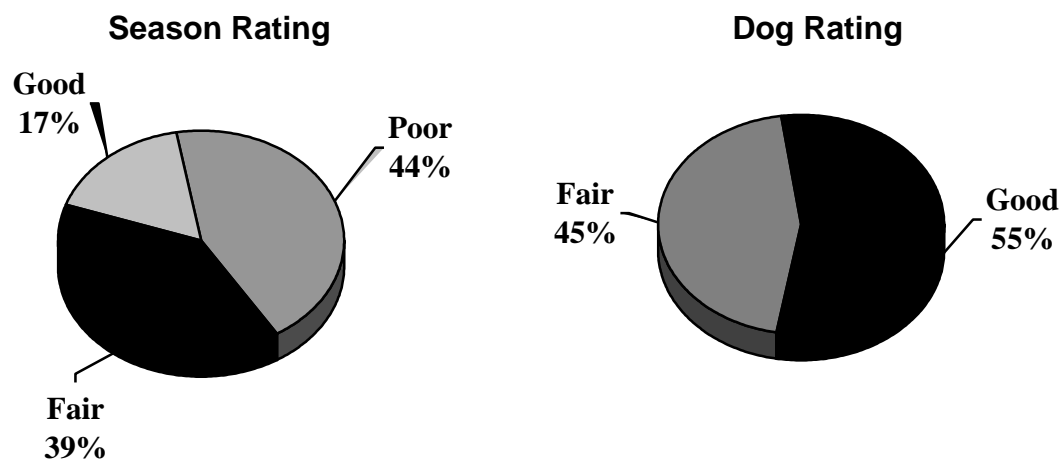
\*Counties with a sample size of less than 15 hunts not included.



**Figure 4. Coveys per hour index by region for the 2011-12 and 2013-14 seasons, South Carolina Quail Hunter Survey.**







#### **Comments From Cooperators**

Forty-four percent of those responding rated the 2013-14 season as poor, while 39% gave the season a fair rating, and 17% a good rating (Fig. 6). Dog performance was rated good or fair by 90% of cooperators (Fig. 6).

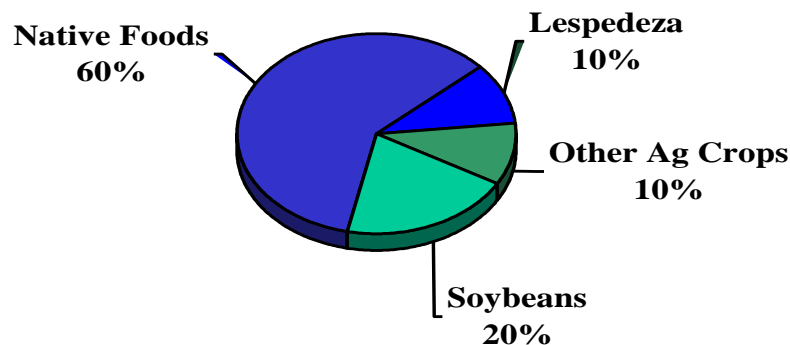


**Figure 6. Ratings of season quality and dog performance by cooperators in the South Carolina Quail Hunter Survey, 2013-14.**

Cooperator comments provide insight into general habitat and hunting conditions and predominant food items utilized by quail during fall and winter. Commonly submitted comments on the 2013-14 quail season are listed below. Number of similar comments received is noted in parentheses.

-  Usually warm and dry weather affected scenting conditions and hunting success (7).
-  Season was poor/worse than last year (7).
-  Season was better than last year; more birds than past few years (3).
-  Habitat conditions good (7).
-  Habitat conditions improved on National Forest lands (1).
-  Birds found in association with clearcuts and soybean fields (2).

The four most often cited food items utilized by quail during the 2013-14 season are illustrated in Figure 7. The “Native Foods” category includes pine seed, acorns, and green vegetation.



**Figure 7. Top 4 bobwhite quail food categories noted by cooperators in the South Carolina Quail Hunter Survey, 2013-14.**

Plans are underway to continue the Quail Hunter Survey for the 2013-14 season. Efforts are ongoing to increase the number of cooperators and all avid quail hunters are encouraged to participate. Contact the SCDNR Small Game Project, P.O. Box 167, Columbia, SC 29202 (telephone 803-734-3609) to be included in the survey.